

1 ACQUISITION MANAGEMENT SYSTEM OVERVIEW

Federal program and project managers are accountable for the planning, programming, budgeting, and acquisition of materiel assets. The principal Department of Energy (DOE) goal is to deliver materiel assets on schedule, within budget, and fully capable of meeting mission performance, quality, and environmental, safety, and health standards. DOE Federal program and project managers are responsible for ensuring that materiel asset projects are managed with integrity and in compliance with applicable laws. Major DOE objectives include obtaining quality products, ensuring timeliness of performance, controlling cost, and mitigating adverse events. To achieve these goals, Federal program and project managers should assemble an Integrated Project Team (IPT) that includes several DOE functional areas, such as budget, financial, legal, safety, and contracting, to assist them with the planning, programming, budgeting, and acquisition of materiel assets.

DOE Federal managers will:

- Justify budgets needed for acquisition of materiel assets
- Ensure line management involvement in and accountability for project performance
- Establish and maintain strong project management organizations and systems
- Use appropriate project management tools
- Develop, train, and qualify project personnel
- Develop and implement programs for institutionalizing project management capabilities.

The requirements contained in the Manual are rooted in five fundamental principles. The principles form the foundation for the requirements and guidance contained in the Manual. These principles are:

1. Key decisions must be made by those who are accountable to the Secretary, the Administration, and Congress.
2. Thorough planning, with special attention to managing risk, is paramount to executability of a project.
3. Independent reviews provide critical confirmation and confidence that the essential foundation has been established; plans are realistic and the project is executable.
4. An effective, functioning project management and control system is an indispensable tool for planning, executing, and measuring progress and performance.
5. Communicating accurate status to stakeholders and those accountable is an obligation and vital for continued support.

This Manual is mandatory for all DOE and National Nuclear Security Administration (NNSA) projects. **The requirements identified in this Manual shall be implemented by all projects**

having an expected Total Project Cost (TPC) greater than \$5M. Projects with a TPC less than \$5M may use their own discretion in applying the requirements contained in this Manual.

This Manual encompasses and describes all project phases from Initiation through Transition/Closeout. Decision-making, planning, budgeting, scheduling, and other key processes are described including roles and responsibilities for program and project managers and IPTs.

Contractors involved with DOE projects, and prime contractors responsible for projects at DOE facilities are expected to comply with this Manual's requirements. Contractor compliance will be required to the extent set forth in their contract. **The Government shall insert a clause(s) into prime contracts requiring compliance with this Manual, when those contracts are involved in the delivery of projects having an expected TPC greater than \$5M.**

This Manual contains requirements, direction, and guidance, based upon past lessons learned and national standards that have been shown valuable in completing successful projects. The requirements, direction, and guidance are to be tailored appropriately in consideration of the complexity, cost, and risks of each acquisition project. Each requirement is to be addressed to the extent necessary and practical for managing each project. Tailoring may involve consolidation of decisions, documentation, and concurrency of processes. Tailoring does not imply the omission of decisions or the failure to address aspects of processes that are appropriate to a specific project's requirements or conditions. Tailoring, however, may allow the elimination of a requirement provided justification is documented and approved by the Acquisition Executive (AE). All projects are inherently unique, so differences are expected. However, when elimination (or combination) of requirements is necessary, extra care should be taken. A clear understanding of the reasons for elimination (or combination) is required to be documented, and management acceptance obtained.

1.1 Project Guiding Principles

Based on project management experience, a number of "guiding principles" have emerged over time. These principles provide overarching guidance, and are applicable and valuable to all projects and project management activities. Project teams and their leaders are expected to be wise stewards of Government resources, and are to be proactive in identifying and implementing less costly approaches.

Leadership

The Project Manager (PM) is unambiguously in charge of the project. PMs are effective leaders nurturing and energizing the IPT. Roles and responsibilities are clearly defined. Authority and accountability are consistent with assigned responsibility.

Leadership uses systematic reviews to ensure mission, safety, and quality criteria are met.

Safety

Project personnel demonstrate an unequivocal commitment to safety and environmental excellence.

Quality Project personnel strive for continuous improvement and consider quality integral to project planning and execution.

Human Resources Functional and project managers emphasize the importance of individual and team skills. Suitably qualified and experienced personnel are assigned to IPTs. Continuity of key project personnel is maintained throughout the project.

User/Owner User/owner organizations are involved early and continuously in project evolution and life cycle activities.

Stakeholder The PM plans, initiates, and maintains stakeholder interfaces, including communications, on a proactive two-way basis. Stakeholder input is considered and used.

Acquisition Strategies Formal, tailored project management processes are effectively implemented with accurate, up-to-date project documents to support project success. Acquisition strategies and execution plans are project cornerstones used to guide the project team in all phases of project delivery. The Project Execution Plan (PEP) is routinely revised and updated throughout the project life cycle to reflect current planning. Acquisition Performance Baselines (APBs) are Federal commitments based on comprehensive risk assessments and definitive technical, schedule, and cost estimates. Baselines are “managed to” and “delivered to”. Change control is rigorous and timely, and baseline breaches are unacceptable.

1.2 DOE Programs and Projects

DOE Programs are major ongoing activities having defined goals, objectives, requirements, and funding levels, and may include one or more projects. Projects are significant activities identified by a Program as being required to meet a mission need, and are characterized as having defined goals, objectives, requirements, life cycle costs, a beginning and an end. Projects are used to acquire materiel capabilities (assets) in support of DOE Program strategic and mission objectives.

DOE projects vary significantly in complexity, size, cost, and importance. Projects are formulated to define and provide the best-value concept, are planned to meet mission objectives as defined in the DOE Strategic Plan, and documented as individual projects with an approved Mission Need Statement (MNS).

1.2.1 Programs

Programs and projects have many similar attributes. For the purposes of this Manual, Programs are considered to be on-going activities that are operational, production, or maintenance oriented and have no defined start or finish. In accordance with systems engineering/value management processes, a Program explores a full range of implementation options including the development of new technologies. A Program performs life cycle cost and performance analyses (value management) of alternatives expected to have a high degree of technical and operational feasibility. The value management methodology, (also known as value analysis, value engineering, value planning, etc.) should be considered for use in all materiel asset acquisition process phases. The value methodology uses a systematic job plan to identify essential functions

necessary to provide the required mission capability; analyze those functions; and generate alternatives to secure them at their greatest worth, on a life cycle benefit-to-cost basis. Top-level requirements generated by a Program provide for subsequent assessment of sub-tier mission operational and project activities. The analysis process is interactive rather than consisting of a discrete set of linear steps. Various alternative solutions are considered and the solutions optimized and analyzed to determine the approach that will consistently meet the mission need and have the lowest expected total life cycle cost and risk to the Government. Risk management principles, including risk comparisons and reductions, are used in alternatives analysis, and schedule and cost estimate formulations. Risk management is an integral part of all phases of a project. A project begins once the program identifies a mission need that can only be met by acquiring a new materiel asset as described by a MNS.

1.2.2 Projects

Projects are specific undertakings that meet a new or revised mission need, involve diverse but related scopes of work, and have a beginning and an end. DOE projects range from straight-forward facility design and build, to developing, designing, and constructing large, complex, one-of-a-kind systems made up of multiple projects or subprojects that often require the integration of multiple locations and facilities into a unified whole. Additionally, projects include other programmatic objectives such as developing and installing software systems, and remediating and dispositioning contaminated sites and facilities. No matter how dissimilar, all projects can be characterized and modeled as passing through various phases that are, in reality, overlapping and interrelated. To prevent the Manual from becoming complex, these interrelationships and overlaps have not been fully detailed. For example, design may be ongoing in one project area while in another project area items may be in construction or testing. PMs need to understand project interdependencies and early-on identify key anchor points or phase gates that are to be met before proceeding through the five Critical Decisions (CDs), as set forth in this Manual.

This Manual uses as a base, the most commonly understood project phases or life cycle events from the System Project model. This System Project model is developed to demonstrate the potential overlapping sub-phases and processes that are generally required to complete a project. The use and tailoring of the Manual's non-mandatory requirements and the associated guidance require that the project life cycle model be understood and used to firm anchor points and integrate the major project phases. These models are not to be confused with "project types" that have been utilized for reporting and budget discussions. Project type definitions are as follows:

- Plant—A complete and useable capability for the purpose of producing an output product
- Facility Construction—A project whose end objective is a structure designed for general purpose use

- System—A complete and useable capability for scientific and technical purposes including research and development
- Restoration—A project whose purpose is the restoration of real property
- Disposition—A project whose purpose is the demolishing and/or disposition of materiel assets
- Infrastructure Improvements—A project whose purpose is to upgrade, improve, or rehabilitate existing assets (excluding mission systems and plants)
- Information Technology—A complete and useable capability for the purpose of creating, storing, and processing information.

1.2.3 *Materiel Asset Acquisition Process Overview*

The acquisition system establishes a management process to translate user needs and technological opportunities into reliable and sustainable systems that provide the required mission capability within the requirements and guidance of the Federal Government (for overall acquisition of assets see OMB Circular A-11, Part 3). The phases and key milestones (known as Critical Decisions or CDs) provide a streamlined structure that emphasizes risk management and affordability. The phases are a logical means of progressively translating broadly stated mission needs into well-defined system, safety, and quality requirements; and ultimately into operationally effective, suitable, and affordable systems. DOE's system is a continuum represented by four high-level phases, five key decisions, and associated integrated reviews. These phases are Initiation, Definition, Execution, and Transition/Closeout. The five key decisions are discussed in Section 2.3.1 and 4.1 and shown in Figures 2-2 and 4-1 are:

- Approve Mission Need (CD-0),
- Approve System Requirements and Alternatives (CD-1),
- Approve APB (CD-2),
- Authorization to Complete Implementation (CD-3), and
- Approve Project Transition Complete (CD-4).

Due to the unique and broad nature of DOE's missions, various projects will have additional sub-phases that may need to be defined. Phases and sub-phases are discussed and highlighted in Section 2.3.1, and in Chapters 4, 5, 6, and 7.

For the purposes of this Manual, the term "system" includes hardware, software, and the human element. Each phase of the acquisition process is designed, among other things to manage risk. Critical Decisions are points in time that allow decision-makers to evaluate the project status and determine if the project is ready to proceed to the next phase. Integral to the phases and Critical Decisions are plans and documents which provide the specific road maps by which the program and project managers, in conjunction with an IPT,

will navigate the phases and provide the appropriate, correct, and timely information to the key decision-makers.

During the Initiation phase, the initial development of an acquisition strategy is documented as part of the MNS. The Acquisition Strategy (AS) defines the business and technical management approach to meet MNS objectives within time and cost constraints. It starts out by necessity as a draft acquisition strategy at CD-0, is firmed following the CD-0 decision, provides the road map for subsequent phases, and is to be approved prior to any contracting or contract awards. It is fully documented and issued at CD-1 for all projects with a TPC greater than \$5M. Chapters 4 and 5 provide detailed guidance on drafting, then issuing the AS as part of CD-1.

Moving into the Definition phase, the key documents include a well-developed AS, Requirements Document (RD), Conceptual Design Report (CDR), and Risk Management Plan (RMP). The AS is an expansive document that provides the range of alternatives considered during the Definition phase and provides the early planning that is required to support the follow-on contracting and procurement decisions. The AS describes the IPT's approach for the successful acquisition of the project and documents the rationale for that approach.

The RD and associated conceptual package documents the outcome of the conceptual design effort and forms the basis for the rough order of cost and schedule estimates. The CD-1 package clearly and concisely describes the system/facility/remediation identified in the MNS that has been selected as the best alternative to pursue. It also provides the decision-makers with bases and justification to understand the other alternatives studied and considered, provides a RMP that includes the risk analysis and comparison of the alternatives and demonstrates the capability for success. The CD-1 package may also provide the bases for the Project Engineering and Design (PED) budget request. Chapter 5 provides additional guidance on the AS, RD, and the conceptual package.

In completing the Definition phase, the project enters the Execution phase where the focus is on further defining the selected alternative, arriving at a high confidence baseline at CD-2, and issuing the complete PEP, all of which support a budget request to complete implementation. A final key check is required as the project enters the most time critical and expensive activity in the Execution phase—the actual implementation of the physical or software system. This is accomplished by performing an executability review in support of CD-3. The most important step in this phase is to properly establish the APB, including a thorough and definitive RMP. Chapter 6 details the Execution phase including the PEP, while Chapter 8 defines the APB requirements.

Finally, the project is ready to move into the Transition/Closeout phase. Although no particular plan, document, or review defines the entrance into this phase, a well planned, structured, and organized project closeout is essential to the success of any project. Such things as completed construction and remediation or software programming governs entrance into this phase. The project prepares to complete testing, commissioning, and

providing final documentation. Chapter 7 provides the guidance for Transition/Closeout. However, the planning and scheduling necessary to accomplish this successfully is performed in earlier phases.

Finally, Chapters 9, 10, and 11 provide guidance on risk management; performance measurement, evaluation; performance reviews and reporting; and project controls. All materiel acquisitions (projects) prepare and use various plans and documents; define organizational roles and responsibilities; utilize risk management, performance measurement and evaluation, and project controls throughout all phases. Two of the activities and documents not discussed in the other phases that are key to successfully identifying and bringing a mission need to Initial Operational Capability (IOC) are the risk management process (including the RMP) and the performance management system description.

All projects having a TPC greater than \$5M are required to perform risk management. Risk management activities are applied continuously throughout all acquisition process phases. However, because of the difference in available information, the level of application and detail will vary for each phase. Early on, management focuses on assessing and comparing the risk in the alternative concepts available to satisfy users needs, and for planning a strategy to address those risks. Program and project managers should focus on risk management throughout the life of a project, not just during preparation for, or at a particular critical decision review. Both the Government and contractors have to understand the risks as a project progresses through the various phases and decision points. Management strategy and planning should be adjusted throughout the process to provide the Government with the best value at the lowest cost. DOE considers the reduction of total cost to acquire and operate systems while maintaining a high level of performance for the user to be of the highest priority. This is reflected, in part, through the introduction of this acquisition process and controls. DOE program and project managers have to set aggressive, yet realistic cost objectives early in an acquisition phase and manage all aspects of the project to achieve those objectives, while still meeting the user's performance and schedule needs. Inherent in this process is the realization that risks should be understood, taken, and managed in order to achieve performance, schedule, and cost objectives. Realistic objectives cannot be set without understanding the risk associated with those objectives. In the past, risk was sometimes viewed as something to avoid and any project that had risk was subject to intense review and oversight. This attitude has changed as DOE managers recognize that risk is inherent in any project and that it is necessary to analyze future events to identify potential risks and take measures to handle them. This is reinforced by the following two quotes from the OMB "Capital Programming Guide":

"When seeking funds during the Budget Phase, the credibility of cost estimates and goals will be examined, and agencies will be held accountable for meeting them."

And “Agencies should choose a portfolio of capital investments that maximizes return to the taxpayer and the Government – at an acceptable level of risk.”

All projects having a TPC greater than \$5M require a performance management system, and for projects having a TPC greater than \$20M, full compliance with American National Standards Institute (ANSI) Standard Electronic Institute of America (EIA)–748, “Earned Value Management Systems” is required. An earned value management system (EVMS) is implemented to assist project management in effectively integrating a project’s technical elements with schedule and cost elements. Its primary purpose is to support management in measuring project performance and determining the status of work completed in comparison to that which was planned. Chapter 10 discusses the overall topic, and Section 10.2 provides the requirements and guidance on EVMS, as it is required for Department materiel acquisitions.

1.2.4 Performance-Based Contracting

Over the last decade the Congress and Executive Branch reformed the laws and policies that govern Federal acquisitions. Of these, the most important include the Government Performance and Results Act of 1993, the Federal Acquisition Streamlining Act of 1994, and the Clinger–Cohen Act of 1996. All of these laws send a message about the importance of performance in Federal programs and acquisitions. Both Federal Acquisition Regulations (FAR) 37.6 (performance–based contracting methods) and the Office of Federal Procurement Policy (OFPP) Letter 91–2 established that:

“It is the policy of the Federal Government that (1) agencies use performance–based contracting methods to the maximum extent practicable when acquiring services, and (2) agencies carefully select acquisition and contract administration strategies, methods, and techniques that best accommodate the requirements.”

The new Administration continues a long history of support for this acquisition approach, as demonstrated in OMB Memorandum M–01–15 (extracted from the Procurement Executive Council’s Strategic Plan) which states:

“...over the next five years, a majority of the service contracts offered throughout the federal government will be performance–based. In other words, rather than micro–managing the details of how contractors operate, the government must set the standards, set the results and give the contractor the freedom to achieve it in the best way.”

Good project management has proven to be one of the foremost tools in performing Performance–based Contracting (PBC) including the use of EVMS, as discussed in A–11. The processes for the acquisition of materiel assets detailed in this Manual lays out, step–by–step, how the Government can successfully perform PBC. It begins by defining existing conditions and comprehensively determining program needs and strategy (early use of IPT) through the CD–0 (MNS) process. It then establishes the high–level requirements, AS, and desired outcomes that are necessary (CD–1 approval and the AS), and provides the

objective, measurable performance through the CD-2 process (establishes the budgetary commitment to Congress) by establishing the APB. Finally, the CD-3 and -4 processes ensure implementation and completion of the Department's objectives. The decision process assures that the Government has prepared performance and cost bases (and the controls for accomplishing the work), that are accurate enough to ensure that the contractor, under PBC, will not be over-constrained or micro-managed.

Section 11.1, "Contract Management," provides an overview and procedure to integrate the project management process with PBC.

1.3 Integrated Project Team

IPTs are an essential element of the Department's acquisition process (see Sections 2.4.8 and 2.8.2). They are to be utilized during all phases of the acquisition process, starting no later than the development of the AS. IPTs operate under the following broad principles:

- Open discussions with no secrets
- Qualified, empowered team members
- Consistent, success-oriented, proactive participation
- Continuous "up- and down-the-line" communications
- Uninhibited coordination and cooperation
- Reasoned disagreement
- Early issue identification and resolution.

The structuring of an IPT begins with the Program Office and follows a logical sequence and prioritization that begins with the user, then the project, the process, constraints, and organizational structure. There may be various IPTs associated with a program, some with overarching responsibilities that intersect a project-specific IPT. They may be established to resolve issues at various levels of the Headquarters, Field, and large contractor organizations. However, for a project there will be only one team specifically and fully focused on the project. The IPT's interaction with other teams and organizations are to be reflected in the PEP.

IPTs function in a spirit of teamwork with participants empowered and authorized, to the maximum extent practicable, to make commitments for the organization and to work together to achieve successful project completion—on time, on schedule, and fully capable of meeting mission requirements. All necessary essential skills are to be represented on the IPT, and members are to give the IPT their priority attention. The IPT concept drives decisions down, rewards team rather than individual effort, reduces the amount of oversight, increases the percentage of resources applied to managing projects, increases training, and eliminates layers of management.

IPTs are led by the PM, and are established early in the Initiation phase of the acquisition process. If a PM is not yet assigned, the Program Manager will organize and lead the team until the PM is available. As IPT leader, the PM is responsible for:

- Preparation and maintenance of a team charter and operating guidance.
- Providing the team with broad program guidance and delegating project decision-making authority appropriate to the member's competency and limitations of authority.
- Requesting and allocating budget
- Maintaining an environment that rewards team success
- Appointing appropriate leads within the team
- Providing project orientation for personnel assigned to the team
- Keeping the team and upper management informed
- Scheduling and holding regular meetings, generally allowing at least two days advance notice for an internal meeting and at least one week advance notice for an external meeting.

Team members will be representative of all competencies that influence the project's performance, safety/quality, schedule, or cost. The IPT is the support team having responsibility for pre-project, project development, design/engineering, and construction/remediation activities as appropriate to the project. As a project progresses from Initiation to Transition/Closeout completion, the IPT will change in both members and capabilities to remain responsive to project needs and requirements. This flexibility allows the PM to adapt the IPT to meet the constantly changing project needs. Depending upon the relative impact of a team competency, team membership may be either full-time or part-time. Team members are trained by their home departments/organizations to execute standard processes and exercise technical and/or business judgment within established policies in support of the assigned project. Team members are responsible to their home departments/organizations for leadership to ensure the integrity, quality, and objectivity of their work and for compliance with established policies, processes, and best practices. The team members are responsible to the team leadership for:

- Ownership of the IPT's charter, goals, and objectives
- Supporting project cost, performance, schedule, safety and quality objectives
- Identifying and meeting commitments
- Maintaining communication with their respective department/organizations, the PM, and other IPT members.

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